

TECHNICAL INFORMATION
AND
SERVICE DATA



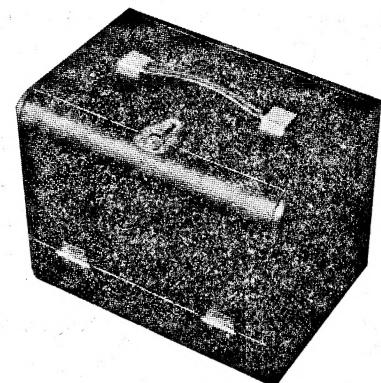
RADIOLAS

PORTABLE MODELS 451-P & 451-PZ
FIVE VALVE, BROADCAST, BATTERY OPERATED
SUPERHETERODYNES

INCORPORATING DATA ON CHRYSLER-DODGE-DE SOTO
RECEIVER MODEL C.D.D.3.

ISSUED BY

AMALGAMATED WIRELESS (A/SIA.) LTD.



①①1

ELECTRICAL SPECIFICATIONS.

FREQUENCY RANGES:

Medium Wave 540-1600 Kc/s (555-187.5 M.)

UNDISTORTED POWER OUTPUT 200 milliwatts
on "Full Battery."

INTERMEDIATE FREQUENCY 455 Kc/s

BATTERY VOLTAGES:

"A" Battery 1.5 volts

"B" Battery 90 volts

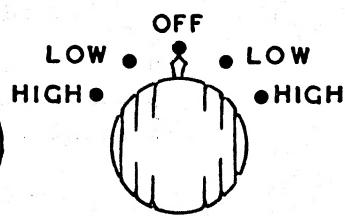
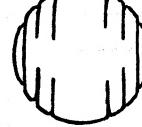
CONTROLS:

BATTERY CONSUMPTION:

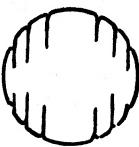
"A" Battery 300 mA.

"B" Battery .. "Bty. Full," 14 mA., "Bty. Saving," 9 mA.

VOLUME



TUNING



LOUDSPEAKER:

5 inch Permanent Magnet—Code No. AC32.

Transformer—XA8.

V.C. Impedance—3 ohms at 400 C.P.S.

BATTERY
FULL

BATTERY
SAVING

TONE

MECHANICAL SPECIFICATIONS.

Height. Width. Depth.

Cabinet Dimensions (inches) 10 $\frac{1}{4}$ 12 $\frac{1}{4}$ 8 $\frac{5}{8}$

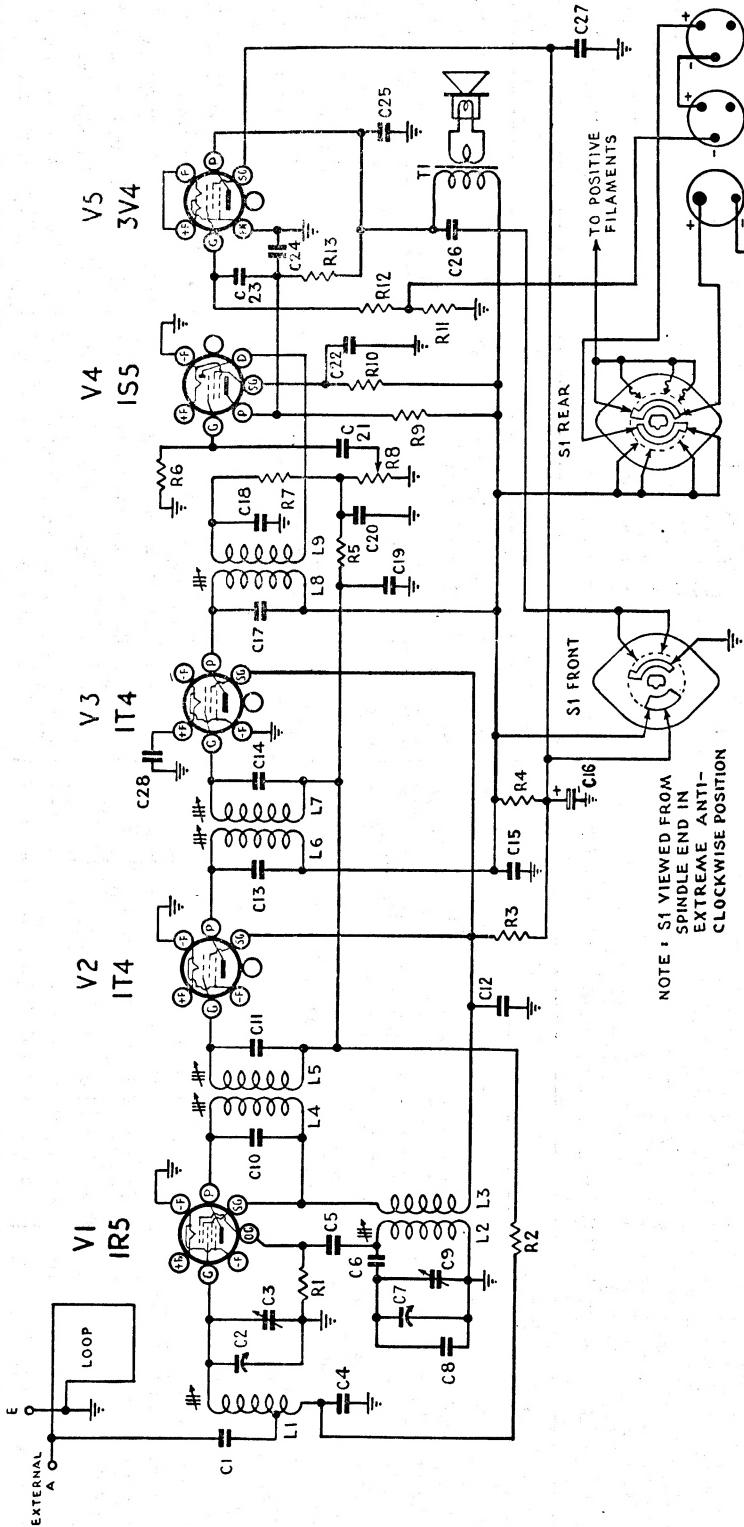
Height. Width. Depth.

Carton Dimensions (inches) 11 13 9

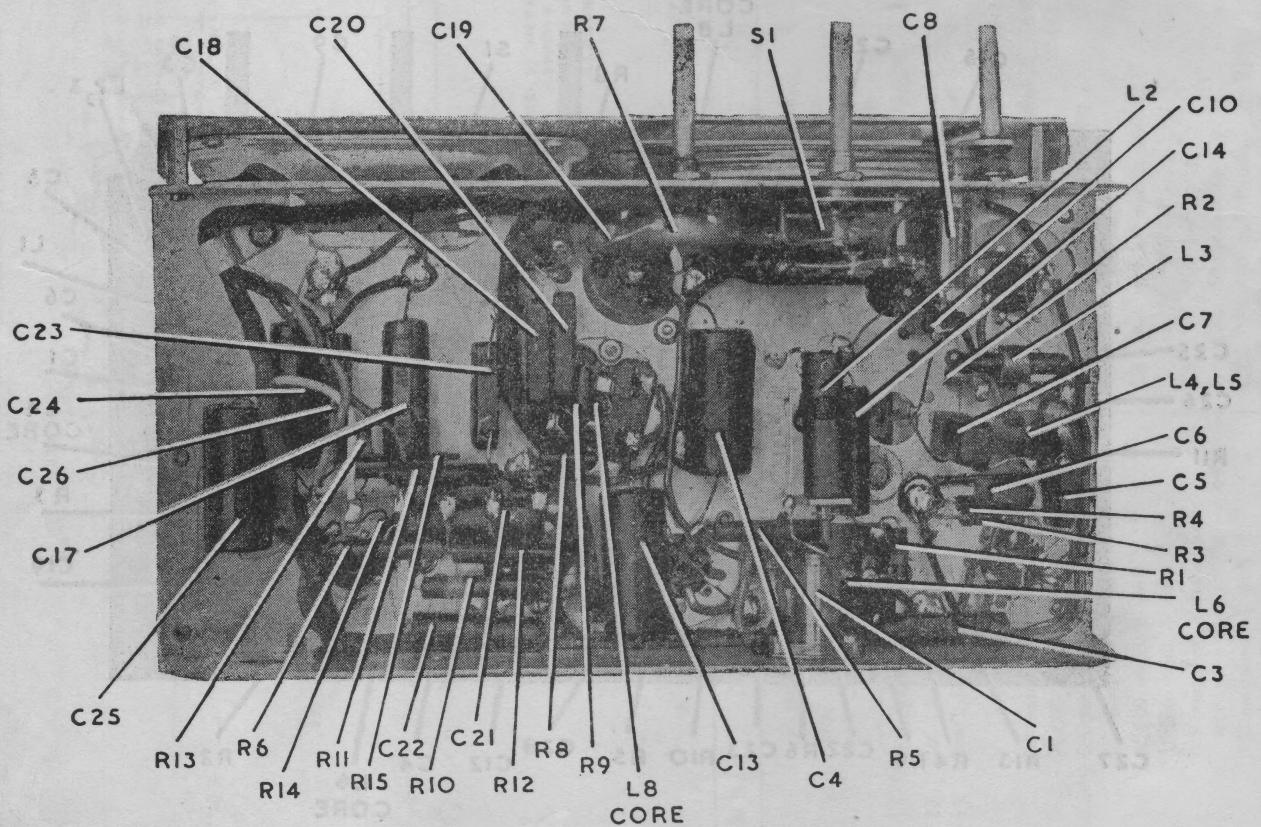
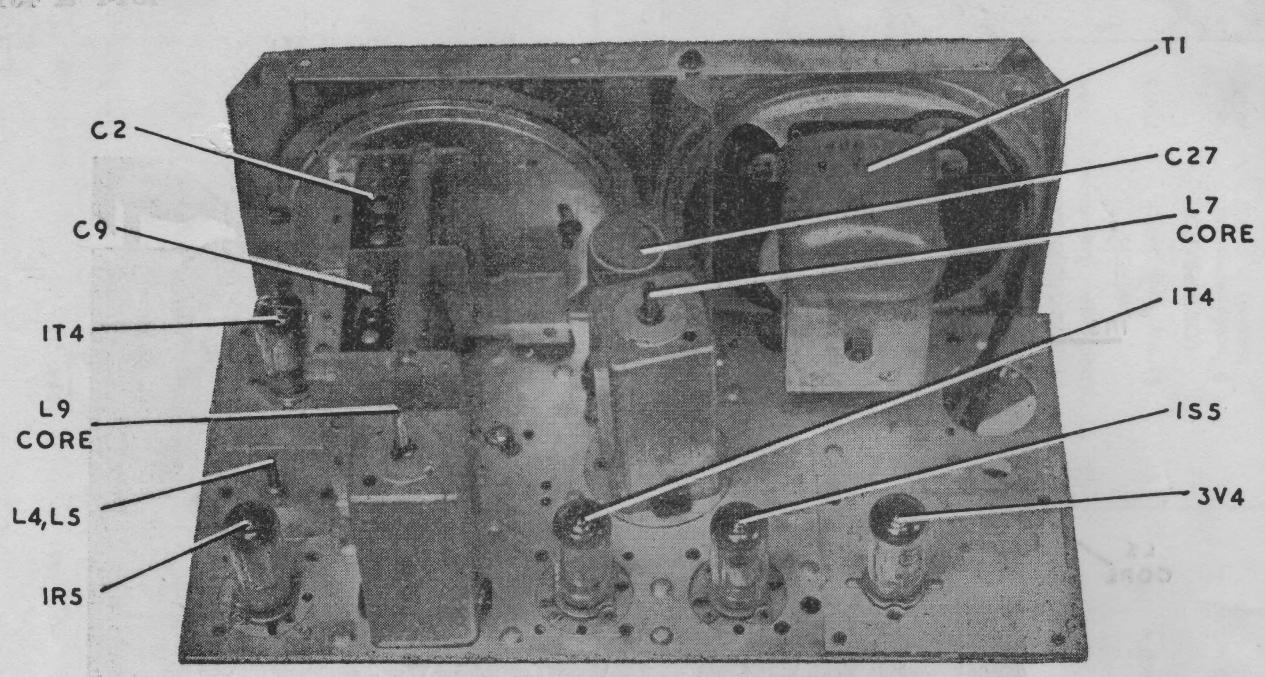
Chassis Base Dimensions (inches) .. 2 $\frac{1}{2}$ 11 5 $\frac{1}{2}$

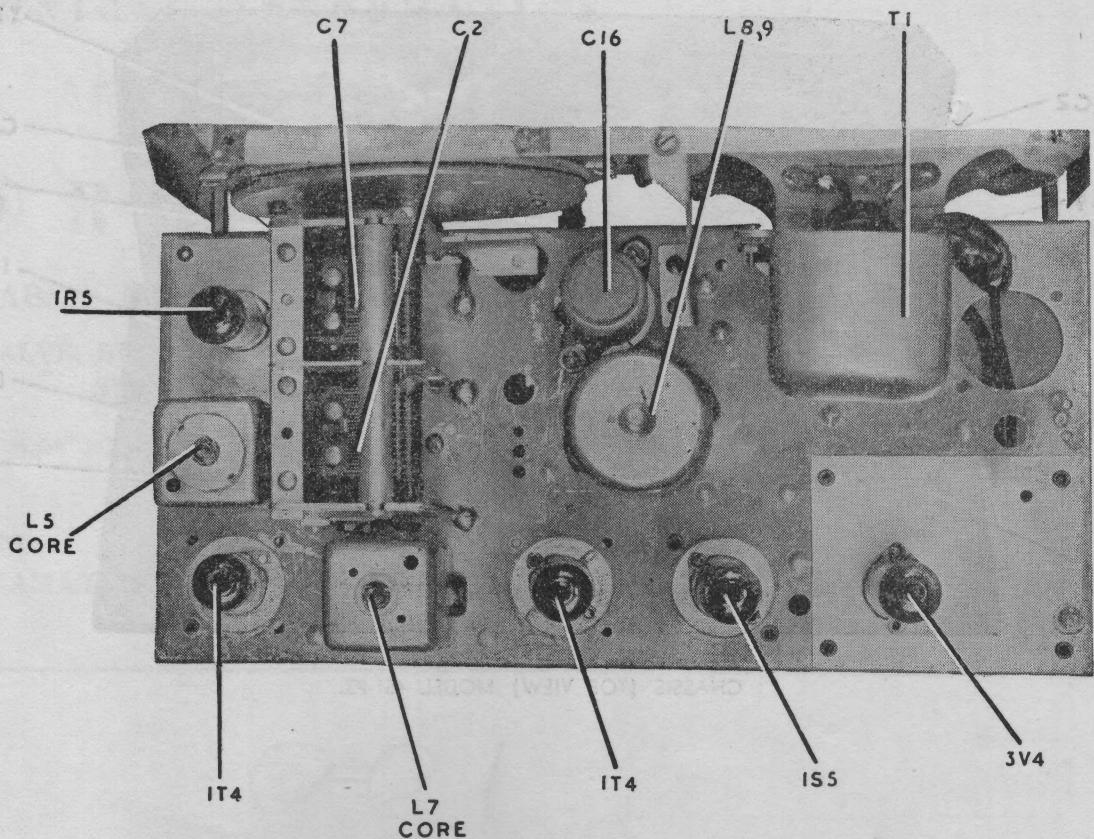
Weight (nett lbs.) 19 lbs. complete with batteries

CIRCUIT DIAGRAM & CODE—CODE—Models 451-P & C.D.D.3

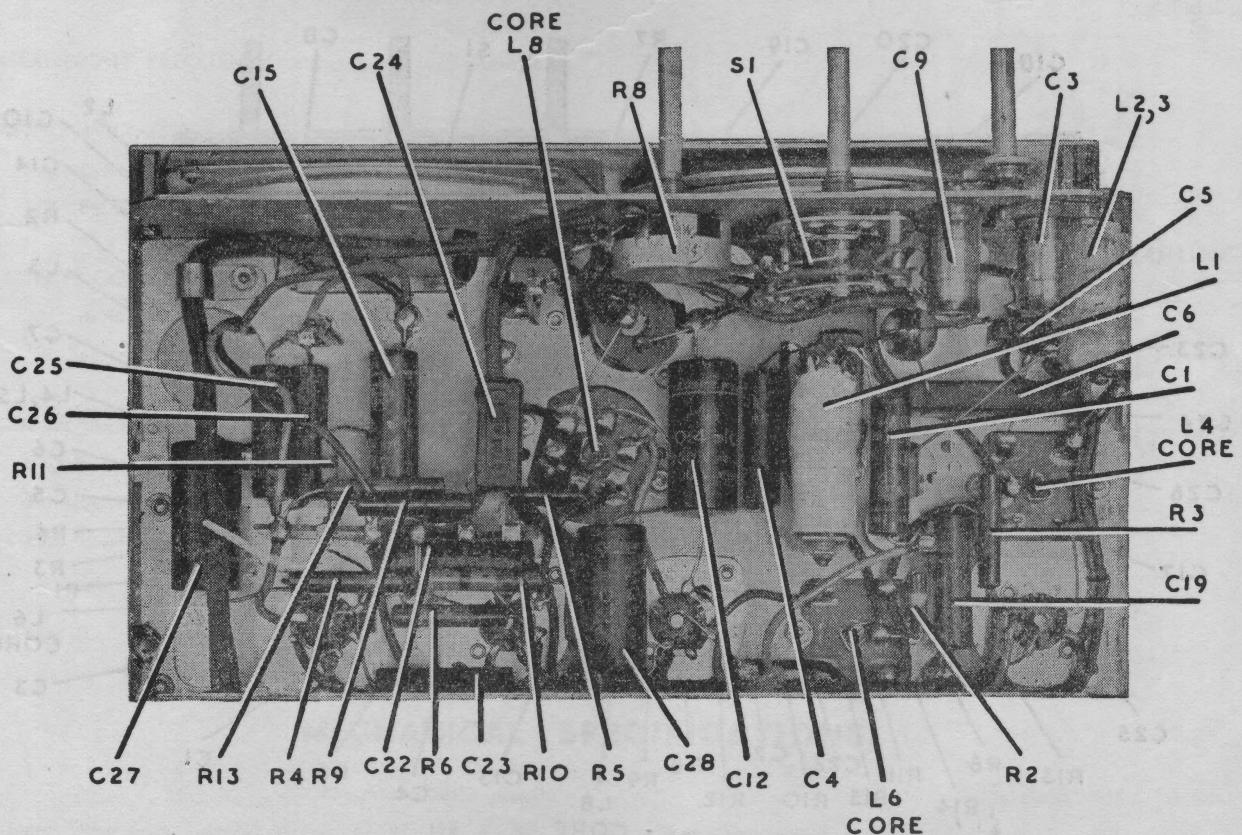


Code No.	Description.	Part No.	Code No.	Description.	Part No.	Code No.	Description.	Part No.
INDUCTORS.			INDUCTORS.			INDUCTORS.		
L1	Aerial Coil	20711	R11	400 ohms, $\frac{1}{2}$ watt	C12	0.4 uF paper, 200 v.	C23	0.025 uF paper, 400 v.
L2, L3	Oscillator Coil	7638	R12	1 megohm, $\frac{1}{2}$ watt	C13	working	C24	100 uuf mica
L4, L5	1st I.F. Transformer	22416	R13	3.2 megohms, 1 watt	C14	70 uuf mica	C25	0.0025 uF paper, 600 v.
L6, L7	2nd I.F. Transformer	22416			C15	0.1 uF paper, 200 v.		
L8, L9	3rd I.F. Transformer	15483			C16	working	C26	0.025 uF paper, 400 v.
RESISTORS.					C17	20 uF 200 P.V. electrolytic		
R1	0.1 megohm, $\frac{1}{2}$ watt	C1	0.05 uF paper, 200 v.	C18	70 uuf mica (in 3rd I.F. Assy.)	C27	0.005 uF paper, 600 v.	
R2	0.1 megohm, $\frac{1}{2}$ watt	C2	12-430 uuf tuning	C19	0.05 uF paper, 200 v.	C28	0.4 uF paper, 200 v.	
R3	25,000 ohms, $\frac{1}{2}$ watt	C3	3-25 uuf air trimmer					
R4	10,000 ohms, $\frac{1}{2}$ watt	C4	0.05 uF paper, 200 v.					
R5	2.5 megohms, $\frac{1}{2}$ watt	C5	50 uuf mica					
R6	10 megohms, $\frac{1}{2}$ watt	C6	470 uuf Rader	C20	100 uuf mica (in 3rd I.F. Assy.)	T1	Loudspeaker Transformer	
R7	20,000 ohms, $\frac{1}{2}$ watt (in 3rd I.F. Assy.)	C7	12-430 uuf tuning	15686	0.025 uF paper, 400 v.	SI	Switch	
R8	0.5 megohm, Volume Control	C8	14 uuf mica	C21	working	22426	Battery/Tone Switch	
R9	1 megohm, 1 watt	C9	3-25 uuf air trimmer	16959	0.1 uF paper, 200 v.		LOUDSPEAKER.	
R10	3.2 megohms, 1 watt	C10	70 uuf mica				5 inch (permanent Magnet)	





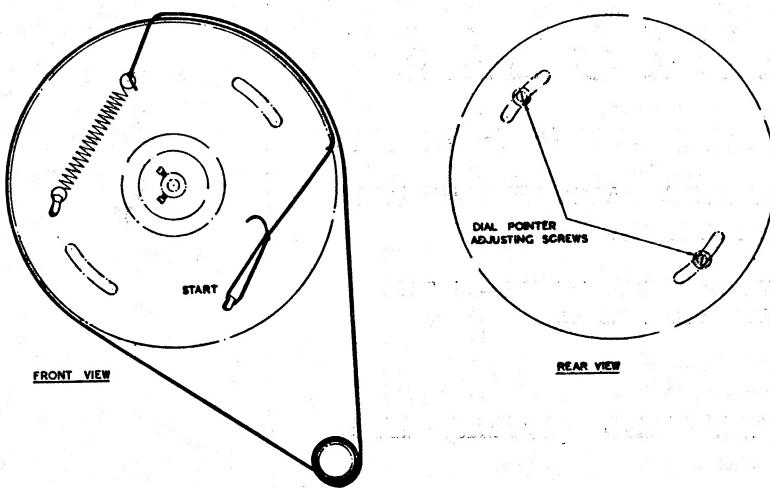
CHASSIS (TOP VIEW) MODEL 451-P and C.D.D.3.



CHASSIS (UNDERNEATH VIEW) MODEL 451-P and C.D.D.3.

Dial Pointer Adjustment.

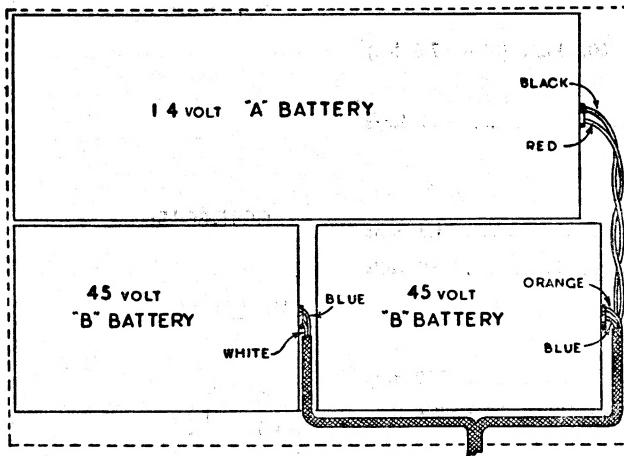
To shift the position of the dial pointer, loosen two screws in the rear of the drive drum—see accompanying diagram—move the drum to the required position and retighten the screws.



GENERAL DESCRIPTION.

The Models 451-P, C.D.D.3 and 451-PZ are portable models and are housed in cases attractively finished in weatherproof baggage cloth. They embody a hinged cover, which effectively protects the dial and controls from damage, dust or weather.

Features of design include: Tropic-proof construction, automatic volume control, magnetite cores in I.F. transformers, oscillator coil and aerial coils, air-dielectric trimming capacitors.



ALIGNMENT PROCEDURE.

Manufacturers' Setting of Adjustments.

The receiver is tested by the manufacturers with precision instruments, and all adjusting screws are sealed. Re-alignment should be necessary only when components in tuned circuits are repaired or replaced, or, when it is found that the seals over the adjusting screws have been broken.

It is especially important that the adjustments should not be altered unless in association with the correct testing instruments listed below.

Under no circumstances should the plates of the ganged tuning capacitor be bent, as the unit is accurately aligned during manufacture and cannot be re-adjusted unless by skilled operators using specialised equipment.

For all alignment operations, except aerial stage, connect the "low" side of the signal generator to the receiver chassis and keep the generator output as low as possible to avoid A.V.C. action. Also, keep the volume control in the maximum clockwise position.

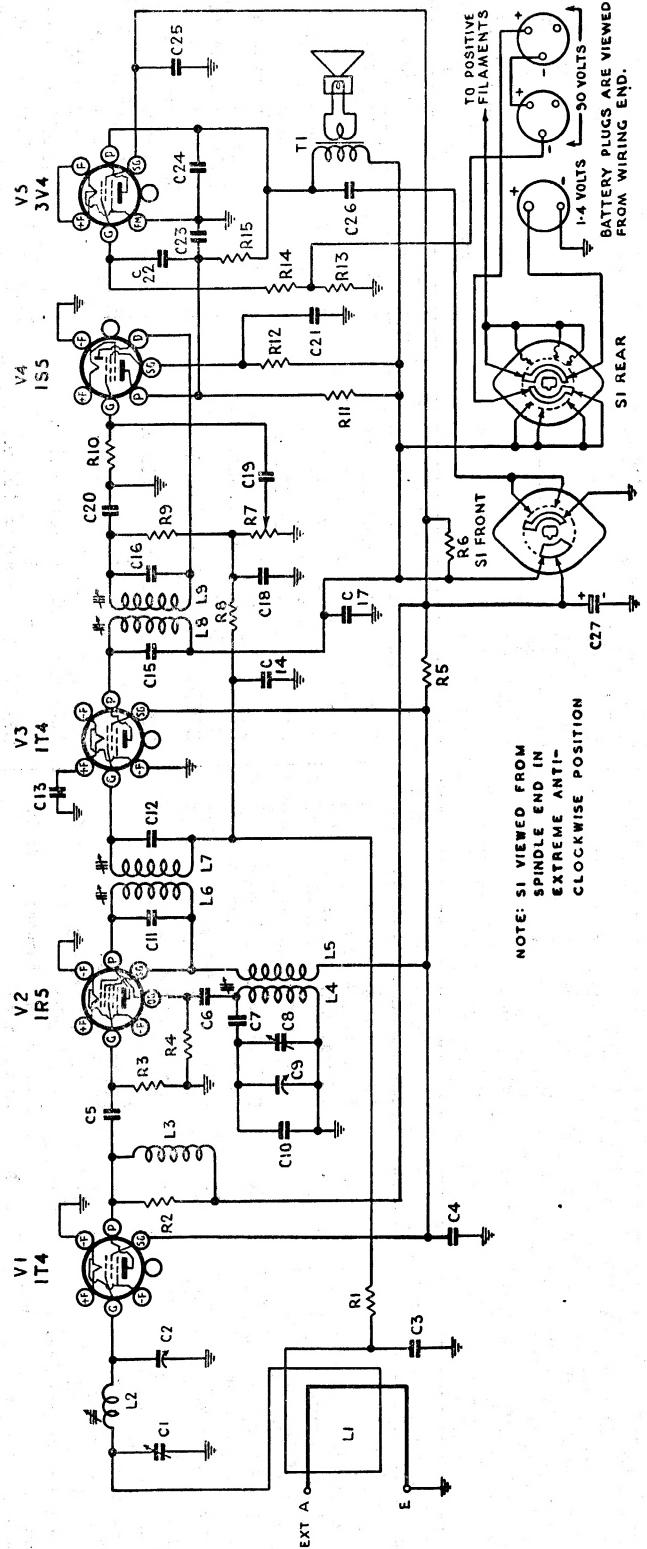
Testing Instruments.

- (1) A.W.A. Junior Signal Generator type 2R3911.
or
- (2) A.W.A. Modulated Oscillator type J6726.

If the modulated oscillator is used, connect an 0.25 megohm non-inductive resistor across the output terminals.

- (3) A.W.A. Output Meter Type 2M8832.

CIRCUIT DIAGRAM & CODE — Model 451-PZ



A Neutralizing Capacitor (C28) has been incorporated in Model 451-PZ. It is connected between the plate of V3 (IT4) and the junction of C14 and R8.

Code No.	Description.	Part No.	Code No.	Description.	Part No.	Code No.	Description.	Part No.
INDUCTORS.								
L1	Aerial Coil Loop	R9	20,000 ohms, $\frac{1}{2}$ watt	C8	3-25 uF Air Trimmer	16959	C22	0.025 uF paper, 400 v. working
L2	Loop Coupling Coil	R10	10 megohms, 1 watt	C9	12-430 uF Tuning	16615	C23	100 uuf mica
L3	Compensating Coil	R11	1 megohm, 1 watt	C10	14 uuf mica		C24	0.0025 uF paper, 600 v. working
L4, L5	Oscillator Coil	22719	3.2 megohms, 1 watt	C11	70 uuf mica		C25	0.4 uF paper, 200 v. working
L6, L7	1st I.F. Transformer	22720	400 ohms, $\frac{1}{2}$ watt	C12	70 uuf mica		C26	0.025 uF paper, 400 v. working
L8, L9	2nd I.F. Transformer	20741	1 megohm, $\frac{1}{2}$ watt	C13	0.4 uF paper, 200 v. working			
		22700	3.2 megohms, 1 watt	C14	0.01 uF paper, 600 v. working		C27	20 uF 200 P.V. Electrolytic
		22703					C28	9 uuf mica (neutralizing)
CAPACITORS.								
C1	0.1 megohm, $\frac{1}{2}$ watt	R12	3-25 uF Air Trimmer	C15	70 uuf mica			
C2	10,000 ohms, 1 watt	R13	12-430 uF Tuning	C16	70 uuf mica			
C3	0.5 megohm, $\frac{1}{2}$ watt	R14	0.05 uF paper, 200 v. working	C17	0.1 uF paper, 200 v. working			
		R15						
RESISTORS.								
R1	0.1 megohm, $\frac{1}{2}$ watt	C18	100 uuf mica					
R2	10,000 ohms, 1 watt	C2	0.025 uF paper, 400 v. working					
R3	0.5 megohm, $\frac{1}{2}$ watt	R5	0.4 uF paper, 200 v. working					
R4	0.1 megohm, $\frac{1}{2}$ watt	R6	100 uuf mica					
R5	10,000 ohms, 1 watt	R7	50 uuf mica					
R6	10,000 ohms, 1 watt	6491	470 uuf Padder, $\pm 2\frac{1}{2}\%$	C20	100 uuf mica			
R7	0.5 megohm, Volume Control	C6	0.1 uF paper, 200 v. working	C21	0.1 uF paper, 200 v. working			
R8	2.5 megohms, $\frac{1}{2}$ watt	C7						

ALIGNMENT TABLE — Models 451-P & C.D.D.3

Order.	Connect "high" side of Generator to:	Tune Generator to:	Tune Receiver Dial to:	Adjust for maximum peak output:
1	Aerial section of gang (rear portion)	455 kc/s	540 kc/s	L8 (core)
2	Aerial section of gang (rear portion)	455 kc/s	540 kc/s	L7 (core)
3	Aerial section of gang (rear portion)	455 kc/s	540 kc/s	L6 (core)
4	Aerial section of gang (rear portion)	455 kc/s	540 kc/s	L5 (core)
5	Aerial section of gang (rear portion)	455 kc/s	540 kc/s	L4 (core)
Repeat above adjustments until the maximum output is obtained.				
6	* Inductively coupled to loop	540 kc/s	540 kc/s	L.F. Osc. Core Adj. (L2)
7	* Inductively coupled to loop	1500 kc/s	1500 kc/s	H.F. Osc. Adj. (C9)
8	* Inductively coupled to loop	600 kc/s	600 kc/s	L.F. Aerial Core Adj. (L1)
9	* Inductively coupled to loop	1500 kc/s	1500 kc/s	H.F. Aerial Adj. (C3)

* A coil comprising 3 turns of 16 gauge D.C.C. wire and about 6 inches in diameter should be connected between the output terminals of the test instrument and placed flat against the loop.

ALIGNMENT TABLE — Model 451-PZ

Order.	Connect "high" side of generator to:	Tune generator to:	Tune receiver Dial to:	Adjust for maximum peak output:
1	Aerial section of gang (front portion)	455 kc/s	540 kc/s	L9 (core)
2	Aerial section of gang (front portion)	455 kc/s	540 kc/s	L8 (core)
3	Aerial section of gang (front portion)	455 kc/s	540 kc/s	L7 (core)
4	Aerial section of gang (front portion)	455 kc/s	540 kc/s	L6 (core)
Repeat above adjustments until the maximum output is obtained				
5	Aerial section of gang (front portion)	540 kc/s	540 kc/s	L.F. Osc. Core Adj. (L4)
6	Aerial section of gang (front portion)	1500 kc/s	1500 kc/s	H.F. Osc. Adj. (C8)
7	* Inductively coupled to loop	600 kc/s	600 kc/s	L.F. Aerial Core Adj. (L2)
8	* Inductively coupled to loop	1500 kc/s	1500 kc/s	H.F. Aerial Adj. (C1)

* A coil comprising 3 turns of 16 gauge D.C.C. wire and about 6 inches in diameter should be connected between the output terminals of the test instrument and placed co-axial with the loop and distant not less than 1 foot from it.

SOCKET VOLTAGES — Models 451-P & C.D.D.3

Valves.	Screen Grid to Chassis Volts.		Anode to Chassis Volts.		Anode Current mA.		Filament Volts.	
	FB*	BS*	FB	BS	FB	BS	FB	BS
IR5 Converter	0	0	33†	25†	33†	25†	0.4	0.2
IT4 I.F. Amplifier	0	0	33†	25†	85	87	1.1	0.7
IT4 I.F. Amplifier	0	0	33†	25†	85	87	1.1	0.7
IS5 Detector	0	0	10†	10†	10†	10†	0.1	0.1
3V4 Output	-5.5	-3.5	85	60†	80	83	7.5	5.0

* FB = Full battery position of Battery/Tone Switch.

BS = Battery saving position of Battery/Tone Switch.

Measured with no signal input.

† These readings may vary depending on the resistance of the voltmeter used.

SOCKET VOLTAGES — Model 451-PZ

Valves.	Screen Grid to Chassis Volts.		Anode to Chassis Volts.		Anode Current mA.		Filament Volts.	
	FB†	BS†	FB	BS	FB	BS	FB	BS
IT4 R.F. Amp.	0	0	45	30	84.5	86.5	1.7	0.7
IR5 Converter	0	0	45	30	45	30	0.5	0.2
IT4 I.F. Amp.	0	0	45	30	84.5	86.5	1.7	0.7
IS5 Det., A.F. Amp. A.V.C.	0	0	25*	25*	30*	30*	0.07	0.07
3V4 Output	-5.5	-3.5	84.5	45	81	85	7.5	5.0

† FB = Full Battery position of Battery/Tone Switch.

BS = Battery Saving Position of Battery/Tone Switch.

* = Calculated from measured current. An ordinary voltmeter will register a lower value.

Measured with no signal input.

MECHANICAL REPLACEMENT PARTS

Item.	Part No.	Item.	Part No.
Cabinet	C80	Dial Scale, Model 451-P, 451-PZ: 21912, 22682 or 23300	
Cabinet back	22429	Model C.D.D.3	21844 or 23329
Cable, battery	20713	Drum, drive assembly	20130
Cable, volume control	20712	Knob, assembly	22433
Chassis end—		Knob	17603
Right-hand	22417	Socket, valve	19965
Left-hand	20124	Strip tag, 1 way	7628
		6 way	22423

D.C. RESISTANCE OF WINDINGS.

Winding.	D.C. Resistance in ohms.
Aerial Coil (451-P, C.D.D.3 only)	4
Tapped Portion	*
Aerial Coupling Coil (451-PZ only)	*
Oscillator Coil—	
Primary	3
Secondary	8
I.F. Transformer Windings—	
1st and 2nd I.F.	10
3rd I.F. (451-P, C.D.D.3 only)	20
Loudspeaker Input Transformer—	
XA8 Primary	425 or 510
Secondary	*

* Less than 1 ohm.

The above readings were taken on a standard chassis, but substitution of materials during manufacture may cause variations and it should not be assumed that a component is faulty if a slightly different reading is obtained.